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REMARKS

Claims 1-18 and 20-24 are pending in the present Application. Reconsideration and allowance of the claims are respectfully requested in view of the following remarks.

Claims 1-11 and 14-18 and 20-22 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over U.S. Patent No. 6,097,587 to Inagawa et al. (hereinafter "Inagawa") in view of U.S. Patent No. 5,279,910 to Sasaki et al. (hereinafter "Sasaki"). In addition, Claims 12-13 and 23-24 stand rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Inagawa and Sasaki as applied to Claims 1 and 21, and further in view of U.S. Patent No. 6,162,530 to Xiao et al. (hereinafter "Xiao"). Applicants respectfully traverse this rejection.

Independent Claim 1 is directed to an asymmetric supercapacitor comprising a positive electrode comprising a current collector and an active material selected from the group consisting of manganese dioxide, silver oxide, iron sulfide and mixtures thereof; a negative electrode comprising carbonaceous active material; an aqueous electrolyte solution; and a separator plate.

Independent Claim 21 is directed to an asymmetric supercapacitor comprising a positive electrode comprising a current collector and manganese dioxide; a negative electrode comprising carbonaceous active material; an aqueous electrolyte solution; and a separator plate.

According to the Office Action, Inagawa essentially discloses the limitations of the present claims (e.g., Claim 1), including a positive electrode comprising a current collector, a negative electrode comprising carbonaceous active material, an aqueous electrolyte solution, and a separator plate.

The Office Action acknowledges that Inagawa does not teach that the positive electrode comprises an active material selected from the group consisting of manganese dioxide, silver oxide, iron sulfide, and mixtures thereof, and relies on Sasaki to remedy this deficiency, citing Sasaki at column 6, lines 24-29. Specifically, the Examiner has stated:

> Sasaki et al. teach a positive electrode comprising manganese dioxide (column 6, lines 24-29).

> It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the positive electrode assembly of Sasaki substituted into Inagawa et al., in order to increase the capacitance for the capacitor.

(Office Action, dated April 15, 2005, page 3).

Finally, Xiao is used for its disclosure of nanoscale materials, such as manganese dioxide.

Applicants respectfully traverse the above rejections. The ultimate issue of obviousness turns on four factual determinations: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed invention and the prior art; and (4) objective indicia of nonobviousness. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 86 S. Ct. 684, 15 L.Ed. 545 (1966). Here, it is believed that the Office Action has failed to consider the references in their totality, in particular any teaching away.

With respect to the first *Graham* factor, the courts have made it clear that obviousness is to be determined in view of the totality of the references. This includes any "teaching away," that is, any disclosure in the references that would lead one of ordinary skill in the art to not make the suggested combination. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984) (A prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention.) In the instant case, Inagawa and Sasaki contain disclosure that would lead away from making the claimed combination.

Both Inagawa and Sasaki concern electric double layer capacitors. However, one of ordinary skill in the art at the time of the invention would not have been motivated to combine any of the features of Sasaki with those of Inagawa because Sasaki explicitly teaches away from the use of liquid electrolytes such as those used in Inagawa. The Examiner's attention is respectfully directed to the text of Sasaki, the relevant portions of which have been reproduced for convenience as shown below.

> In the field of primary batteries, small and lightweight lithium batteries have already been commercialized but their utility is quite limited. This may be explained as follows: liquid electrolytes, in particular those which have ionic compounds dissolved in organic electrolytes, have conventionally been used with batteries that

> utilize an electrochemical reaction or other electrochemical devices such as electric double layer capacitors and electrochromic devices but such **liquid electrolytes suffer from problems such as low long-term reliability and splashing in the sealing step because there is high likelihood of electrolyte leakage from parts of the battery and dissolution or evaporation of electrode materials.**
>
> (Sasaki, column 1, lines 18-30, emphasis added).
>
> The present invention has been accomplished under these circumstances and has as an object providing a battery of a type that uses an ion-conductive high-molecular weight compound and which is improved in that it can be fabricated with great ease, **is entirely free from the possibility of leakage and has high long-term reliability and safety.**
>
> This object of the present invention can be accomplished by a battery that comprises a negative electrode, a composite positive electrode composed of an ion-conductive high-molecular weight compound that has at least one ionic compound dissolved therein and that has a polyether structure and ion conductivity, an electrochemically active material and, optionally, an electron conductive material, and **an electrolyte made of an ion-conductive high-molecular weight compound that has at least one ionic compound dissolved therein and that has a polyether structure and ion conductivity, which battery is characterized in that said composite positive electrode and said electrolyte are formed by exposure to an active radiation such as ultraviolet rays or ionizing radiation.**
>
> (Sasaki, column 2, lines 6-28, emphasis added)
>
> In the present invention, **the high-molecular weight compounds of a crosslinked network structure are formed by reaction involving exposure to an active radiation such as ultraviolet rays or ionizing radiation.** Since this method is capable of completing the necessary processing within a short time at low temperature, it offers the advantage that a desired battery can be fabricated with a much higher efficiency than when the conventional thermal polymerization method is adopted.
>
> (Sasaki, column 3, lines 35-45, emphasis added)

In other words, Sasaki makes use only of solid electrolytes in accordance with an object of the invention, which is to provide a battery that both is free from any possibility of electrolyte leakage and that has high long-term reliability and safety. Since electrolyte leakage and low long-term reliability and safety are characteristics that Sasaki has attributed to liquid electrolytes, one having ordinary skill in the art would never consider modifying Sasaki in such a manner as to have a liquid electrolyte. Inagawa, in contrast, only discloses liquid electrolytes (e.g., sulfuric acid).

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This incompatibility between the electrolytes of Inagawa and those of Sasaki teach away from making the Office Action's suggested combination, because the proposed modification would render Sasaki unsatisfactory for its intended purpose (i.e., to provide a battery that both is free from any possibility of electrolyte leakage and that has high long-term reliability and safety), which is in contravention of MPEP 2143.01. In other words, one of ordinary skill in the art would have had no motivation or suggestion to combine the disclosure of Inagawa with that of Sasaki in order to achieve the claimed invention. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing, *inter alia,* that the prior art relied upon, coupled with knowledge generally available in the art at the time of the invention, contain some suggestion or incentive that would have motivated the skilled artisan to modify a reference or combined references, determined from the vantage point of the skilled artisan at the time the invention was made. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Here, Inagawa only teaches liquid electrolytes and Sasaki teaches away from using liquid electrolytes, and the rejection is therefore improper.

In essence, Applicants maintain that the Examiner has used an improper standard in arriving at the rejection of the above claims under Section 103, based on improper hindsight, which fails to consider the totality of Applicants' invention and to the totality of the cited references. In doing so, the Examiner has failed to consider the teachings of the references as a whole in contravention of Section 103, including the disclosures of Inagawa and Sasaki that teach away from their combination.

It is further believed that the Office Action has improperly evaluated the content of the prior art in equating Inagawa's disclosure of a **symmetric** electric double layer capacitor or supercapacitor with Applicants' claimed **asymmetric** supercapacitor. Applicants disclose and claim only **asymmetric** supercapacitors, while Inagawa only discloses **symmetric** supercapacitors. Asymmetric and symmetric supercapacitors are markedly different in structure and in their mechanisms of operation.

In view of the foregoing, Applicants respectfully request withdrawal of the rejections to Claims 1-18 and 20-24.

It is believed that the foregoing amendments and remarks fully comply with the Office Action

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and that the claims herein should now be allowable to Applicants. Accordingly, reconsideration and withdrawal of the objection(s) and rejection(s) and allowance of the case are respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Respectfully submitted,

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